Important – Please Read

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5.5 LTE Device Certification Process ................................................................................................ 19

6 REFERENCES ................................................................................................................................... 20
### Revision History

<table>
<thead>
<tr>
<th>Rev.</th>
<th>Author</th>
<th>Description of Changes</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8</td>
<td>Verizon Wireless</td>
<td>Initial Release</td>
<td>June 2010</td>
</tr>
<tr>
<td>1.0</td>
<td>Verizon Wireless</td>
<td>Version 1.0</td>
<td>September 2010</td>
</tr>
<tr>
<td>2.0</td>
<td>Verizon Wireless</td>
<td>Version 2.0&lt;br&gt;Added sections 3.1.4, 3.1.5, 4.1, and 4.2</td>
<td>September 2010</td>
</tr>
<tr>
<td>3.0</td>
<td>Verizon Wireless</td>
<td>Added sections 3.1.6, 3.3.2, 4.3, 4.4, and 4.5</td>
<td>October 2010</td>
</tr>
<tr>
<td>4.0</td>
<td>Verizon Wireless</td>
<td>Added section 4.6</td>
<td>November 2010</td>
</tr>
<tr>
<td>5.0</td>
<td>Verizon Wireless</td>
<td>Added sections 4.1.2, 4.6.2, and 5.1.2</td>
<td>December 2010</td>
</tr>
<tr>
<td>6.0</td>
<td>Verizon Wireless</td>
<td>Updates to sections 1, 3.1, 3.2, 3.3, 3.4, 4.2.1, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 6</td>
<td>April 2011</td>
</tr>
<tr>
<td>7.0</td>
<td>Verizon Wireless</td>
<td>Updates to sections 3.1.9, 3.1.10, 3.1.11, 3.1.12, 3.3.3, 3.3.4, 5.1.3, 5.2.2, 5.5</td>
<td>July 2011</td>
</tr>
<tr>
<td>8.0</td>
<td>Verizon Wireless</td>
<td>Updates to sections 3.1.7, 3.1.8, 3.1.11, 3.1.12, 3.2.2, 3.2.3, 3.3.4, 3.3.5, 3.4.1, 3.5, 4.1.1, 4.1.2, 4.3.1, 4.3.3, 4.7, 5.1.3, 5.2.2, 5.5.1</td>
<td>December 2011</td>
</tr>
<tr>
<td>9.0</td>
<td>Verizon Wireless</td>
<td>Updates to sections 3.1.13, 3.1.14, 3.3.5, 3.5</td>
<td>January 2012</td>
</tr>
<tr>
<td>10.0</td>
<td>Verizon Wireless</td>
<td>Updates to sections 3.1.7, 3.1.8, 3.1.11, 3.1.13, 3.1.14, 3.1.15, 3.2.3, 3.3.5, 4.1.1, 4.2.1</td>
<td>July 2012</td>
</tr>
</tbody>
</table>
1 Introduction

The purpose of this document is to update information regarding the LTE Band 13 requirements, test plans or testing process that is typically temporary in duration.

This publication is part of Verizon Wireless’ compliance with the FCC’s rules for 700 MHz C Block (47 C.F.R. § 27.16), as explained in the FCC’s Second Report and Order in WT Docket No. 06-150, “Service Rules for the 698-746, 747-762 and 777-792 MHz Bands” released on August 10, 2007.
## 2 Glossary and Definition of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMEI</td>
<td>International Mobile Equipment Identity</td>
</tr>
<tr>
<td>IOT</td>
<td>Interoperability Testing</td>
</tr>
<tr>
<td>LTE</td>
<td>Long Term Evolution is a term which encompasses several 3GPP terms, such as EPS (Evolved Packet System) and E-UTRAN (Evolved Universal Terrestrial Radio Access Network).</td>
</tr>
<tr>
<td>LTE_DEVELOPER</td>
<td>The company/person who develops an LTE device to operate on the Verizon Wireless LTE 3GPP Band 13 Network</td>
</tr>
<tr>
<td>LTE DEVICE</td>
<td>The LTE DEVICE which is being submitted by the LTE_DEVELOPER</td>
</tr>
<tr>
<td>NDET</td>
<td>Network Device Evaluation Team</td>
</tr>
<tr>
<td>OTA</td>
<td>Over The Air</td>
</tr>
<tr>
<td>RAN</td>
<td>Radio Access Network</td>
</tr>
<tr>
<td>RF</td>
<td>Radio Frequency</td>
</tr>
<tr>
<td>SFN</td>
<td>Safe For Network</td>
</tr>
<tr>
<td>VzW</td>
<td>Verizon Wireless</td>
</tr>
<tr>
<td>VzW Approved Lab</td>
<td>Verizon Wireless Approved Lab Test Lab is a facility that Verizon Wireless has approved to execute the LTE Test Plans</td>
</tr>
<tr>
<td>Verizon Wireless LTE RAN Vendor</td>
<td>Verizon Wireless Radio Access Network Vendor is a supplier to Verizon Wireless of LTE RAN Infrastructure equipment</td>
</tr>
<tr>
<td>UICC</td>
<td>Universal Integrated Circuit Card</td>
</tr>
</tbody>
</table>

This document uses the following verbal forms in conjunction with requirements:

- “Shall” or “Shall not” indicates the requirement is mandatory
- “Should” indicates the requirement is recommended but not mandatory
- “May” indicates the requirement is optional
3 Requirements Announcements

Based on feedback from the industry, the non-availability of some test procedures, and limitations in the available LTE 3GPP Band 13 components, Verizon Wireless has approved the following exceptions. Further information on the status of these exceptions will be published at a future date.

Verizon Wireless reserves the right to modify this list if it determines changes are necessary to protect against harm to the network or users or to ensure user access to network functionality.

3.1 Verizon Wireless LTE 3GPP Band 13 Network Access Requirements

3.1.1 Announcement 09-2010-1: Requirements Exceptions Applicable to All Devices

VOID

3.1.2 Announcement 09-2010-2: Requirements Exceptions Applicable to Data-Centric Devices Only

VOID

3.1.3 Announcement 09-2010-3: Implementation Clarification Applicable to All Devices

The following implementation is acceptable to Verizon Wireless. However, this should not be considered the only valid implementation.

<table>
<thead>
<tr>
<th>Section</th>
<th>Implementation Clarification</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.8.2 APN Enable/Disable</td>
<td>For the Class 1 and Class 2 APN’s, the enable/disable status may be checked before attach to the LTE network only.</td>
</tr>
<tr>
<td>3.2.8.4.1 UICC APN Verification Enabled</td>
<td>If the device only checks the enable/disable status of the Class 1 and Class 2 APN's before attach to the LTE network, then the device shall detach from the LTE network if a change is made to any APN network identifier or APN-related parameter. Before re-attach to the LTE network, the device shall check the enable/disable status of the Class 1 and Class 2 APN’s.</td>
</tr>
</tbody>
</table>
3.1.4 Announcement 09-2010-4: Section 3.1.2.7 in Verizon Wireless LTE 3GPP Band 13 Network Access Requirements Marked as “FUTURE” (Applicable to All Devices)

VOID

3.1.5 Announcement 09-2010-5: MTU Size (Applicable to All Devices)

VOID

3.1.6 Announcement 10-2010-1: Update to APN Inactivity Timers (Applicable to All Devices)

VOID

3.1.7 Announcement 4-2011-1: Release 9 Support (Applicable to All Devices), UPDATED 7/2012

- Support for 3GPP Release 9 as detailed in section 1.3 (3GPP Release 9 Specifications) of the Verizon Wireless LTE 3GPP Band 13 Network Access Requirements is mandatory for all devices that complete the device certification process after October 31st, 2012.

- Devices that complete the device certification process by October 31st, 2012, shall support either 3GPP Release 9 as detailed in section 1.3 (3GPP Release 9 Specifications) of the Verizon Wireless LTE 3GPP Band 13 Network Access Requirements or 3GPP Release 8.

- For devices that are certified by October 31st, 2012, and support 3GPP Release 8, in the Verizon Wireless LTE 3GPP Band 13 Network Access Requirements, all instances of the term “3GPP Release 9 Specifications” shall be read to require “3GPP Release 8 Specifications” where “3GPP Release 8 Specifications” refers to all 3GPP specifications that have been updated for Release 8 as of the September 2009 baseline with the exceptions noted below:

  - The following CR’s shall be included:
• 3GPP C1-094465, CR#1411: Correction for Separation bit of AMF
  (CR to 3GPP TS 24.008: Mobile radio interface Layer 3 specification;
  Core network protocols; Stage 3)
• 3GPP C1-094488, CR#504: Mapped QCI Handling in UE (CR to
  3GPP TS 24.301: Non-Access-Stratum (NAS) protocol for Evolved
  Packet System (EPS); Stage 3)
• 3GPP C1-095360, CR#570: Default value for T3412 (CR to 3GPP TS
  24.301: Non-Access-Stratum (NAS) protocol for Evolved Packet
  System (EPS); Stage 3)
• 3GPP C1-100570, CR#692: TAU request and ciphering in connected
  mode (CR to 3GPP TS 24.301: Non-Access-Stratum (NAS) protocol
  for Evolved Packet System (EPS); Stage 3)
• 3GPP R1-094119, CR#94: Correction to Channel interleaver for
  PUSCH RE Mapping (CR to 3GPP TS 36.212: Evolved Universal
  Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding)

➤ The following 3GPP documents shall be per the December 2009 versions:
• 3GPP TS 36.101: Evolved Universal Terrestrial Radio Access (E-
  UTRA); User Equipment (UE) radio transmission and reception
• 3GPP TS 36.133: Evolved Universal Terrestrial Radio Access (E-
  UTRA); Requirements for support of radio resource management

➤ The following 3GPP documents shall be per the latest Release 9 versions:
• 3GPP TS 36.508: Evolved Universal Terrestrial Radio Access (E-
  UTRA) and Evolved Packet Core (EPC); Common test environments
  for User Equipment (UE) conformance testing, Release 9
• 3GPP TS 36.509: Evolved Universal Terrestrial Radio Access (E-
  UTRA); Special conformance testing function for User Equipment
  (UE), Release 9
• 3GPP TS 36.521-1: Evolved Universal Terrestrial Radio Access (E-
  UTRA); User Equipment (UE) conformance specification; Radio
  transmission and reception; Part 1: conformance testing, Release 9
• 3GPP TS 36.521-2: Evolved Universal Terrestrial Radio Access (E-
  UTRA); User Equipment (UE) conformance specification; Radio
  transmission and reception; Part 2: Implementation Conformance
  Statement (ICS), Release 9
• 3GPP TS 36.521-3: Evolved Universal Terrestrial Radio Access (E-
  UTRA); User Equipment (UE) conformance specification; Radio
  transmission and reception; Part 3: Radio Resource Management
  conformance testing, Release 9
• 3GPP TS 36.523-1: Evolved Universal Terrestrial Radio Access (E-
  UTRA) and Evolved Universal Terrestrial Radio Access Network (E-
  UTRAN); User Equipment (UE) conformance specification; Part 1:
  Protocol conformance specification, Release 9
• 3GPP TS 36.523-2: Evolved Universal Terrestrial Radio Access (E-
  UTRA) and Evolved Packet Core (EPC); User Equipment (UE)
  conformance specification; Part 2: ICS, Release 9
The versions for all referenced 3GPP documents shall be as per the September 2009 Release 8 baseline with the exceptions noted above.

3.1.8 Announcement 4-2011-2: LTE Test Application for Antenna Testing (Applicable to All Devices), UPDATED 12/2011

VOID

3.1.9 Announcement 04-2011-3: Requirements Exceptions Applicable to All Devices

VOID

3.1.10 Announcement 04-2011-4: Update to UICC Form Factor Requirement (Applicable to All Devices)

VOID

3.1.11 Announcement 07-2011-1: Requirements Exceptions Applicable to All Devices, UPDATED 12/2011

VOID

3.1.12 Announcement 07-2011-2: APN Inactivity Timer Requirement Removal (Applicable to All Devices)

VOID

3.1.13 Announcement 01-2012-1: ATTACH REQUEST Message (Applicable to All Devices)

VOID

3.1.14 Announcement 01-2012-2: ATTACH ACCEPT Message (Applicable to All Devices)

VOID
3.1.15 Announcement 07-2012-1: Device Equipment Identifier (Applicable to All Devices)

Effective immediately and until further notice, for all devices currently under development including planned maintenance releases for launched devices, device vendors shall put on hold (do not implement) the requirement “The SVN component of the IMEISV shall be incremented by 1 for each post-launch software version” in section 3.2.9 of the Verizon Wireless LTE 3GPP Band 13 Network Access Requirements.

Note:
- For any devices currently under development, the value for the SVN component of the IMEISV shall be a constant of ‘00’ for the launch and post launch software versions on the device.
- For any devices that have already implemented the IMEISV increment mechanism, the current value of the SVN component of the IMEISV shall be maintained without any change for any future software updates/upgrades.

3.2 Verizon Wireless LTE Data Retry Requirements

3.2.1 Announcement 09-2010-1: Requirements Exceptions Applicable to All Devices

VOID

3.2.2 Announcement 04-2011-1: Requirements Exceptions Applicable to All Devices

VOID

3.2.3 Announcement 12-2011-1: Requirements Exceptions Applicable to All Devices, UPDATED 7/2012

Effective immediately, the September and December versions of the Verizon Wireless LTE Data Retry Requirements are void. All devices that complete the device certification process by September 30th, 2012, shall be designed to either the June 2011 or April 2012 version of the Verizon Wireless LTE Data Retry Requirements. All devices that complete the device certification after September 30th, 2012, shall be designed to the April 2012 version of the Verizon Wireless LTE Data Retry Requirements.
3.3 Verizon Wireless LTE SMS Requirements

3.3.1 Announcement 09-2010-1: Requirements Exceptions and Clarifications Applicable to All Devices

VOID

3.3.2 Announcement 10-2010-1: Requirements Updates to Sections 5.1.1.1 and 5.1.1.2 of the Verizon Wireless LTE SMS Requirements (Applicable to All Devices)

VOID

3.3.3 Announcement 04-2011-1: Requirements Exceptions and Clarifications Applicable to All Devices

VOID

3.3.4 Announcement 07-2011-1: Requirements Exceptions and Clarifications Applicable to All Devices, UPDATED 12/2011

The following requirements exceptions/clarifications are applicable to all devices that complete the device certification process by March 31st, 2012:

<table>
<thead>
<tr>
<th>Section</th>
<th>Exception/Clarification</th>
<th>Expected Device Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOID</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.1.2.10 Application Directed SMS</td>
<td>When a MT SMS message arrives via the SMS over IMS method, the device shall remove the SIP headers and decode the binary content that is in the payload of the SIP MESSAGE. The device shall then check to see if this SMS is an application directed SMS. If yes, then the application directed SMS shall be passed to the intended application. If the device receives a MO SMS from the UICC, the device should accept the 3GPP formatted SMS message from the UICC, and construct the SIP MESSAGE per the 3GPP Message Format for MO SMS Messages section of The following requirement is mandatory: When a MT SMS message arrives via the SMS over IMS method, the device shall remove the SIP headers and decode the binary content that is in the payload of the SIP MESSAGE. The device shall then check to see if this SMS is an application directed SMS. If yes, then the application directed SMS shall be passed to the intended application. The following requirement is optional but Verizon Wireless strongly recommends that the device support this requirement:</td>
<td></td>
</tr>
</tbody>
</table>
the Verizon Wireless LTE SMS Requirements regardless of the current setting of the smsformat parameter.

If the device receives a MO SMS from the UICC, the device shall accept the 3GPP formatted SMS message from the UICC, and construct the SIP MESSAGE per the 3GPP Message Format for MO SMS Messages section of the Verizon Wireless LTE SMS Requirements regardless of the current setting of the smsformat parameter.

### 3.3.5 Announcement 12-2011-1: IPSec Exception (Applicable to All Devices), UPDATED 7/2012

The following requirement exception/clarification is applicable to all devices that complete the device certification process by October 31st, 2012:

<table>
<thead>
<tr>
<th>Section</th>
<th>Exception/Clarification</th>
<th>Expected Device Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1.3.3 Authentication during registration</td>
<td>IPSec for integrity protection is not required.</td>
<td>The device is not required to support IPSec for integrity protection. If the device does not support IPSec, the device shall use IMS AKAv2 for IMS authentication.</td>
</tr>
</tbody>
</table>

All devices which enter device certification testing on or after November 1st, 2012, shall support IPSec.

### 3.3.6 Announcement 04-2011-2: Requirements Exception Applicable to Data-Centric Devices Only

Effective immediately, support for user text SMS messages is optional for data-centric devices that are not held up to the head. All devices shall support administrative SMS messages for the OTADM application and the SIM OTA application.

### 3.4 Verizon Wireless LTE OTADM Requirements

#### 3.4.1 Announcement 04-2011-1: Correction to the Table in Section 4.3.2.5 (Applicable to All Devices)

VOID

### 3.5 Announcement 12-2011-0: Requirements Look and Feel
Effective immediately, the look and feel of Verizon Wireless LTE open access documents has changed: requirements text may be underlined and/or in blue. This is a result of a change in the software tools used within Verizon Wireless to generate requirements documents. No impact to the requirements themselves shall be inferred based on these changes.
4 Test Plan Announcements

4.1 Verizon Wireless LTE 3GPP Band 13 Data Throughput Test Plan

4.1.1 Announcement 09-2010-1: Sections 3.7, 3.11, and 3.12 Marked as “FUTURE” (Applicable to All Devices), UPDATED 7/2012

Sections 3.7 (Multi-Flow Throughput), 3.11 (Downlink UDP Throughput with Variable Reference Measurement Channels), and 3.12.4 (Downlink UDP Throughput with Advanced Channel Models) are currently marked as “FUTURE”. Device vendors do not need to comply with the test cases in these sections at this time. Verizon Wireless expects the tests in these sections to be required in the future, and will provide a notice in advance of the applicable date.

Until UE antenna complex pattern support is available, device vendors are expected to provide results for 3.12.3 for informational purposes only. Test platform vendors shall assume the UE antennas are dipoles with a half-wavelength separation for the tests in section 3.12.3 until such a time that UE antenna complex pattern support is available.

4.1.2 Announcement 12-2010-1: All IPv6 Performance Tests
VOID

4.2 Verizon Wireless LTE SMS Test Plan

4.2.1 Announcement 09-2010-1: IPSec and IMS AKAv2 Support (Applicable to LTE SMS Test Platforms)

The LTE SMS test platform shall support IMS AKAv2 for IMS authentication for devices which do not support IPSec for integrity protection (refer to section 3.3.5, i.e. Verizon Wireless LTE SMS Requirements announcement 12-2011-1, for additional details). The LTE SMS test platform shall support IPSec for devices which support IPSec for integrity protection.

4.3 Verizon Wireless LTE 3GPP Band 13 Device Interoperability Test Plan

4.3.1 Announcement 10-2010-1: Section 3.6
VOID

4.3.2 Announcement 10-2010-2: Sections 3.10, 3.11, 3.12 and 3.13
The Test Cases in Sections 3.10, 3.11, 3.12 and 3.13 apply only to devices with a User Interface built into the device itself.

4.3.3 Announcement 10-2010-3: Sections 5.1.3, 5.1.6, 5.1.9, 5.1.12, 5.3.3, 5.3.6, 5.3.9, 5.3.12
VOID

4.4 LTE 3GPP Band 13 Lab Conformance Test Plan

4.4.1 Announcement 10-2010-1: Section 2
VOID

4.5 LTE 3GPP Band 13 Safe For Network Test Plan

4.5.1 Announcement 10-2010-1: Section 2
VOID

4.6 LTE Data Retry Test Plan

4.6.1 Announcement 11-2010-1: Section 2
Test cases 2.2 and 2.3 require that the device does not attempt to send a message to the network in less than 10 seconds and there is no upper limit defined in the test plan. Since there is no upper limit defined, the test case passes even if the device does not send a message at all before the test case completes.

4.6.2 Announcement 12-2010-1: Section 5
It is permissible for the tester to disable the IMS client as per Reference 1, section 3.2.10.2.1, “IMS Test Mode” when executing Data Retry test case 5.3.

4.7 GCF Band 13 Conformance Testing
4.7.1 Announcement 12-2011-1: 3-Cell Tests Not Required

Device vendors do not need to comply with the following test cases in 3GPP TS 36.521-3: 7.2.1, 8.1.1, 8.1.2.

Device vendors do not need to comply with the following test cases in 3GPP TS 36.523-1: 6.1.1.3, 8.2.4.7, 8.3.1.7, 9.2.3.1.20.
5 Device Certification Announcement

5.1 Safe-For-Network Testing

5.1.1 Announcement 06_2010-1: LTE SFN Lab Availability
VOID

5.1.2 Announcement 12-2010-1: LTE SFN For CES Demonstrations
VOID

5.1.3 Announcement 07-2011-1: New LTE SFN Lab Available
VOID

5.2 Lab Conformance Testing

5.2.1 Announcement 06_2010-1: LTE Conformance Lab Availability
VOID

5.2.2 Announcement 07-2011-1: New LTE Conformance Lab Available
VOID

5.3 Interoperability Testing

5.3.1 Announcement 06-2010-1: IOT Lab Availability
VOID

5.4 Field Testing

5.4.1 Announcement 06-2010-1: Field Test Network Availability
VOID

5.5 LTE Device Certification Process

5.5.1 Announcement 07-2011-1: Regression Testing with a Certified Module

VOID
6 References

2. Verizon Wireless LTE 3GPP Band 13 Field Test Plan
3. Verizon Wireless LTE 3GPP Band 13 Interoperability Test Plan
7. Verizon Wireless LTE 3GPP Band 13 Device Conformance Test Process